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⑤4 Sun blind.

(67) A sun blind comprising a trip arm formed by two pivotally intercoupled arm parts (4) and (5) and being fastened by one end with the aid of an upwardly extending pivotal shaft to a supporting structure, whereas the other end is fastened to a cloth beam, the two arm parts (4) and (5) being also pivotally coupled with one another with the aid of an upwardly extending pivot axis in a manner such that the two arm parts (4) and (5) are at an obtuse angle to one another. Thereby the arm parts (4) and (5) are made from hollow profiles and into the

**proximal ends of the arm parts (4) and (5) are inserted coupling members which partly protrude out of the arm parts (4) and (5). Said coupling members are obtained by severing them from an extrusion profile separation planes transverse of the direction of length of the extrusion profile, whilst the portions of the coupling members lying outside the arm parts (4) and (5) have holes extending between the separation planes and being at an angle differing from 90° to the separation planes.**

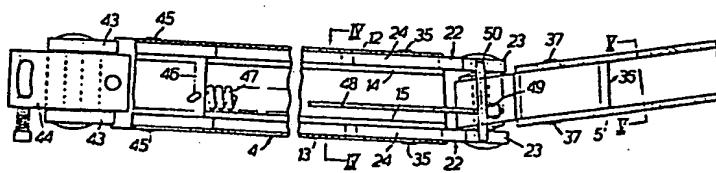


FIG. 2.

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#### SUN BLIND

The invention relates to a sun blind comprising two pivotally interconnected arm parts forming a trip arm, which is  
5 fastened by one end to a supporting structure with the aid of an upwardly extending pivot axis, whereas the other end is fastened to a cloth beam, said arm parts being furthermore pivotally intercoupled with the aid of an upwardly extending pivot pin in a manner such that the two arm parts are at an obtuse angle to one another.

10 Such sun blinds are known per se. In these sun blinds the two arm parts are at an angle to one another in order to prevent the cloth, in the opened state of the sun blind, from coming into contact with the trip arm usually lying below the cloth.

In the conventional constructions the various component  
15 parts for coupling the arms with one another are formed by castings, which involves an expensive manufacture.

According to the invention the arm parts are made from hollow profile beams and coupling members are inserted into the proximal ends of the arm parts, said members partly protruding out of the arm parts,  
20 and being obtained by severing them from an extrusion profile along separation planes transverse of the direction of length of the extrusion profile, the portions of the coupling member lying outside the arm parts having holes extending between the separation planes and being at an angle differing from  
25 90° to the separation planes.

By using the construction embodying the invention the various

component parts can be simply manufactured by extrusion, which materially reduces the cost price of the parts.

The invention will be described more fully hereinafter with reference to an embodiment of the construction in accordance 5 with the invention shown in the accompanying drawings.

Fig. 1 is a schematic side elevation of a sun blind embodying the invention.

Fig. 2 is partly a sectional view and partly an elevational view of a trip arm of a sun blind embodying the invention.

10 Fig. 3 is partly a plan view and partly a sectional view of the trip arm shown in Fig. 2.

Fig. 4 is a cross-sectional view of the profile of a first arm part of the trip arm taken on the line IV-IV in Fig. 2.

15 Fig. 5 is a cross-sectional view of another arm part taken on the line V-V in Fig. 2.

Fig. 6 is a sectional view of the pivotal joint between the two arm parts.

Fig. 7. is an elevational view of a coupling member.

Fig. 8 is a side view of the coupling member of Fig. 7.

20 Fig. 9 is an elevational view of the second coupling member.

Fig. 10 is a side view of the member of Fig. 9.

Fig. 11 is an elevational view of a coupling member being the image of the coupling member shown in Fig. 9.

Fig. 12 is an elevational view of the member of Fig. 11.

25 Fig. 13 is an elevational view of a coupling member to be used near one end of the trip arm.

Fig. 14 is a side elevation of the member of Fig. 13.

As is schematically shown in Fig. 1 the embodiment of the sun blind comprises a casing 1 to be fastened to a building or the 30 like, and accommodating a reel of cloth 2.

Such a sun blind usually comprises at least two trip arms 3, each formed by two arm parts 4 and 5. The arm part 4 of each trip arm is pivotally coupled by means of an upwardly extending pivot shaft 6 with the casing 1 or a similar supporting structure. The other end of 35 the arm 4 is coupled by means of a pivot shaft 7 also extending in upward direction with one end of the other arm part 5. The free ends of the arm parts 5 support a cloth beam 6 to which the free end of the cloth 9 of the sun blind is fastened.

The two arm parts 4 and 5 are formed by extrusion, generally of aluminium or a similar light-weight metal. It is apparent in particular from Figs. 2 to 5 that the arm part 4 has a larger section than the arm part 5. The arm part 4 has a substantially rectangular section with relatively parallel longitudinal walls 10 and 11 and transverse walls 12 and 13 interconnecting said longitudinal walls. On the inner side the longitudinal walls 10 and 11 are provided at a given distance from the transverse walls 12 and 13 with protruding noses 14 and 15 respectively.

Fig. 5 shows that the arm part 5 has two relatively parallel longitudinal walls 16 and 17 interconnected at their ends by relatively parallel transverse walls 18 and 19. In the sides of the transverse walls 18 and 19 facing one another semi-circular section grooves 20 and 21 respectively extend in the direction of length of the arm part 5 near the longitudinal walls 16 and 17.

Into the end of the arm part 4 directed towards the arm part 5 are inserted two identical coupling members 22. Figs. 7 and 8 show that such a coupling member is formed by a plate-shaped member having a hub part 23 and a finger 24 integral with the latter. The finger has a T-shaped recess 25 having rounded-off corner parts 26 and 27.

The hub part 23 is furthermore integral with an outwardly extending nose 28 having a recess 29 of at least substantially circular cross-section.

Near the end of the finger 24 adjoining the hub part 23 there are provided extensions 30 and 31 which, together with the finger, form grooves 32 and 33 respectively for receiving the ends of the arm parts.

The hub part 23 has furthermore a bore 34. As will be seen in particular in Fig. 8 the centre line of said bore 34 is at an angle differing from  $90^\circ$  to the two relatively parallel boundary planes of the plate-shaped coupling member 22. Said angle is preferably about  $85^\circ$ .

The coupling member described above can be obtained by extruding a profile in the direction of length of the bore 34 formed during the extrusion. Then such a profile is divided into slices along separation planes being at an angle  $\alpha$  of about  $5^\circ$  to the longitudinal axis of the extruded profile.

The fingers 24 of the resultant coupling members are slid into the end of the profile beam 4 in the manner illustrated in Figs. 3 and 2, the fingers being then enclosed between the transverse walls 12 and 13 and the protruding noses 14 and 15. Then the profiles 5 can be fixed in place with the aid of one or more pins 35 passed through the transverse walls 11 and 12 of the arm part 4 and the recesses 25 so that these pins will lie in the corner parts 26 and/or 27.

Into the end of the arm part 5 facing the arm part 4 is 10 inserted a coupling member 36 (Figs. 9, 10), the section of which is identical to that of the coupling member shown in Figs. 7 and 8. Therefore, corresponding parts of said coupling member are designated by the same reference numerals as in Figs. 7 and 8 with the addition 15 of an accent. It will be obvious that this coupling member can be made from the same extruded profile as the coupling member described with reference to Figs. 7 and 8. However, this coupling member has a larger thickness than the coupling member of Figs. 7 and 8 so that said coupling member intimately fits in the end concerned of the arm part 5, in which it can be fixed in a similar manner with the aid of 20 one or more pins 37 as described above for the coupling members 22.

From Figs. 9 and 10 it furthermore appears that with this coupling member 36 the protruding nose 28' has an elongated hole 38.

Fig. 6 shows in detail that the portion of the coupling member 36 emerging from the arm part 5 is located between the portions 25 of the coupling members 22 emerging from the arm part 4. Through the bores 34 in these coupling members is passed the pivotal pin 7 formed by a sleeve. The pivotal pin is held in place with the aid of cap-shaped parts 39 located on the distal sides of the coupling members 22 and having a pin 40 inserted with intimate fit into the 30 hollow shaft 7.

Between the sides of the coupling member 36 and the proximal sides of the two coupling members 22 are arranged rings 41 having bores for passing the sleeve 7. The sides 42 of the rings 41 facing the proximal sides of the coupling members 22 have a spherical shape, 35 which facilitates the tilting movement to be performed by the two arm parts relatively to one another when they are turned out of the open position shown in Figs. 2 and 3 into the closed position of the sun

blind, in which the two arm parts are more or less parallel to the direction of length of the cloth reel 2.

- Into the end of the arm part 4 remote from the arm part 5 are inserted two coupling members 43 made from an extruded profile 5 having the same cross-section as the coupling members described above. However, the coupling members 43 are taken from the extruded profile in a manner such that the relatively parallel boundary faces of this coupling member are at right angles to the longitudinal axis of the bore 39 as will be apparent, in particular, from Figs. 13 and 14.
- 10 The ends of the coupling members 43 protruding from the arm part 4 are located on both sides of a supporting block 44 with which the coupling members are coupled with the aid of the pivotal pin 6.

The coupling members 43 are again fixed in place with the aid of one or more guard pins 45.

- 15 Furthermore the recess 25 of the coupling members 43 receives the ends of a pin 46 located in the interior of the arm part 4. With this pin is coupled one end of a tensile spring 47 located in the hollow arm part 4. The other end (not shown) of the tensile spring is connected with a cable 48. The end of the cable 48 remote from 20 the spring 47 is passed through the elongated hole in the coupling member 36 and the end protruding from this elongated hole is provided with a sleeve 49 clamped tight to said end and being in contact with the nose 28'. The recess 29' of this nose 28' accommodates furthermore a pin 50. The ends of said pin 50 protrude below and 25 above the coupling member 36 and constitute stops co-operating with the noses 28 of the coupling members 22 for preventing a further turn of the arm part 5, as viewed in Fig. 3, in clockwise direction about the pivotal pin 7 with respect to the arm part 4.

- For closing the sun blind the arm part 5 is turned against 30 the force of the spring 47, as viewed in Fig. 3, in anti-clockwise direction with respect to the arm part 4 about the pivotal shaft 7. The cable 48 then winds off along the rounded-off outer side of the hub part 23' of the coupling member 36 so that undesirable kinking and/or damage of the cable 48 will not occur.

- 35 For the trip arms on both ends of the sun blind are required a right-hand and a left-hand structure. Nevertheless the various

coupling members for interconnecting the arm parts can be made from the same extruded profile, which will be obvious by a comparison of Figs. 9 and 10 with Figs. 11 and 12. The two Figures show coupling members forming images one of the other and obtained by cutting, in 5 one case, the coupling members obliquely in opposite senses from the extruded profile with respect to cutting in the other case.

From the foregoing it will be obvious that by using an extruded profile both left-hand and right-hand coupling members can be obtained for allowing the interconnection of arm parts at an 10 obtuse angle to one another of a trip arm, as well as coupling members which can be used near one end of the trip arm for establishing a conventional pivotal joint.

As a matter of course supplements and/or modifications of the above-described construction are possible within the spirit and scope 15 of the invention. For example, it is conceivable to make the extrusion profile without the bore 34. The coupling members for the interconnection of the arm parts may then be separated from the extrusion profile along separation planes at right angles to the direction of length of the extrusion profile. Then the bores 34 may be made in 20 the resultant coupling members at an angle differing from 90°, for example, an angle of 85° to the separation planes.

The figures used in the claims are only meant to explain more clearly the intention of the invention and are not supposed to be any restriction concerning the interpretation of the invention.

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CLAIMS

1. A sun blind comprising a trip arm formed by two pivotally intercoupled arm parts and being fastened by one end with the aid of an upwardly extending pivotal shaft to a supporting structure, whereas the other end is fastened to a cloth beam, the two arm parts being also pivotally coupled with one another with the aid of an upwardly extending pivot axis a manner such that the two arm parts are at an obtuse angle to one another characterized in that the arm parts are made from hollow profiles and in that into the proximal ends of the arm parts are inserted coupling members which partly protrude out of the arm parts and which are obtained by severing them from an extrusion profile along separation planes transverse of the direction of length of the extrusion profile, the portions of the coupling members lying outside the arm parts having holes extending between the separation planes and being at an angle differing from 90° to the separation planes.
2. A sun blind as claimed in Claim 1 characterized in that said holes extend in the direction of length of the extrusion profile and the separation planes are at an angle differing from 90° to the direction of length of the profile.
3. A sun blind as claimed in Claim 1 or 2 characterized in that the coupling members arranged in the two arm parts are parts of an extrusion profile having the same cross-section.
4. A sun blind as claimed in anyone of the preceding Claims characterized in that a coupling member is formed by a hub part pro-

truding out of the arm part and having a bore and by a finger located in the arm part, said bore extending in the direction of length of the extrusion profile.

5. A sun blind as claimed in Claim 4 characterized in that the hub part is provided with a protruding nose having a recess extending in the direction of length of the extrusion profile.

6. A sun blind as claimed in anyone of the preceding Claims characterized in that a portion of a coupling member protruding from one arm part is located between two portions of coupling members 10 protruding from the other arm part.

7. A sun blind as claimed in anyone of the preceding Claims characterized in that the separation planes of a coupling member associated with one arm part and of a coupling member associated with the other arm part are inclined in opposite senses with respect to the 15 direction of length of the extrusion profile.

8. A sun blind as claimed in anyone of Claims 5 to 7 characterized in that a recess of a nose associated with the coupling member connected with one arm part accommodates a pin which co-operates as a stop with the nose of a coupling member connected with the other 20 arm part.

9. A sun blind as claimed in anyone of the preceding Claims characterized in that with the nose of a coupling member connected with one arm part there is coupled a spring anchored in the other arm part.

25 10. A sun blind as claimed in anyone of the preceding Claims 4 to 9 characterized in that the finger of the coupling member has a T-shaped recess.

11. A sun blind as claimed in anyone of the preceding Claims characterized in that the trip arm is coupled with a supporting 30 structure with the aid of a coupling member severed from an extrusion profile having the same cross-section as the extrusion profile from which the coupling members interconnecting the arm parts are made, in a manner such that the boundary faces of said coupling member are at right angles to the longitudinal axis of the extrusion 35 profile.

12. A sun blind as claimed in anyone of the preceding Claims characterized in that the ends of the arm parts located near the

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pivot pin are located in planes parallel to the pivot pin.

13. A coupling member apparently intended for use in a sun blind as claimed in anyone of the preceding Claims.

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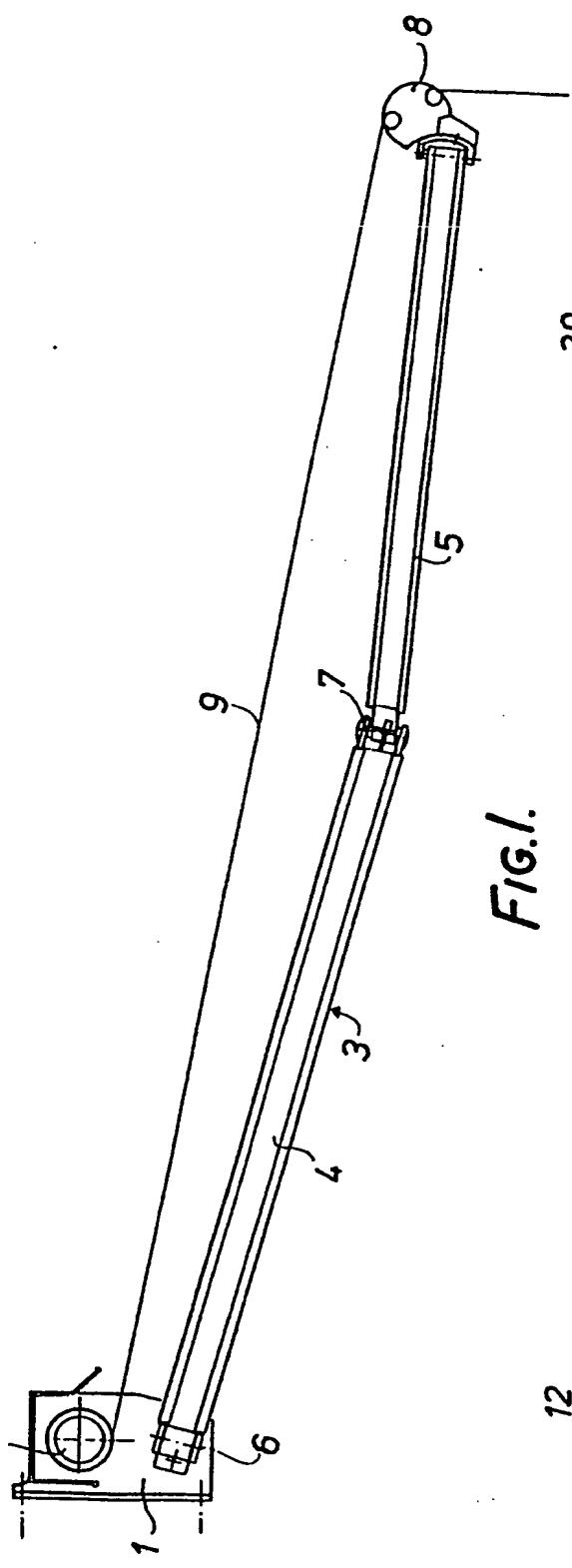


FIG. 1.

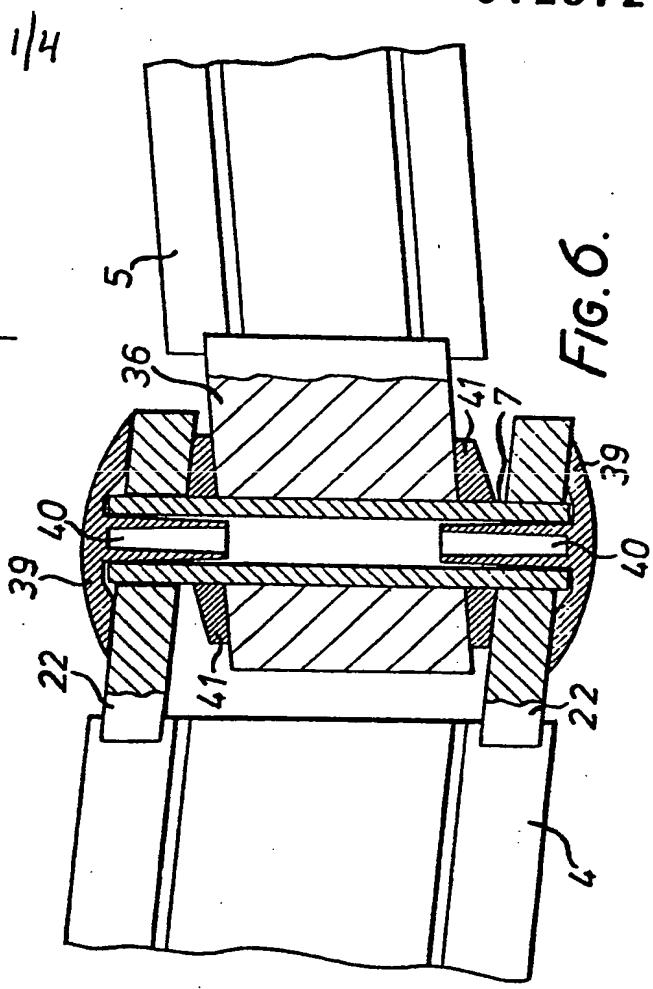


FIG. 6.

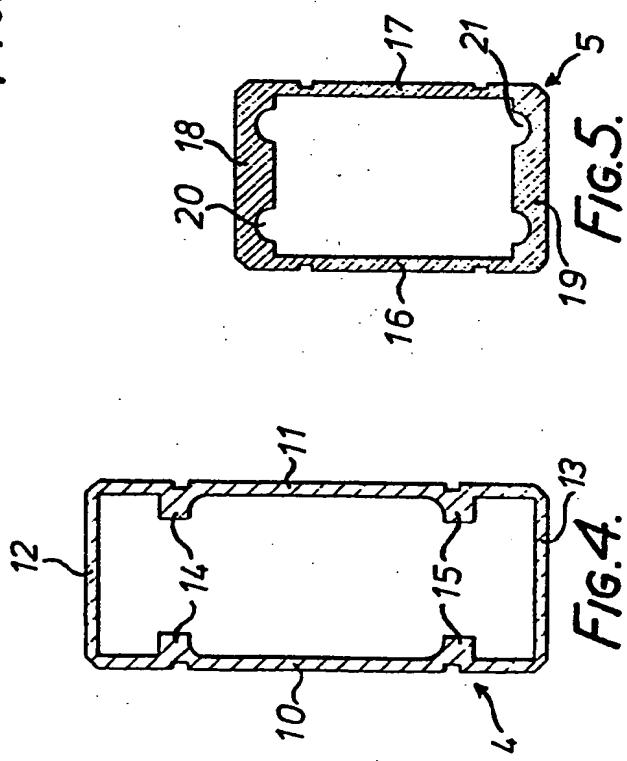


FIG. 4.

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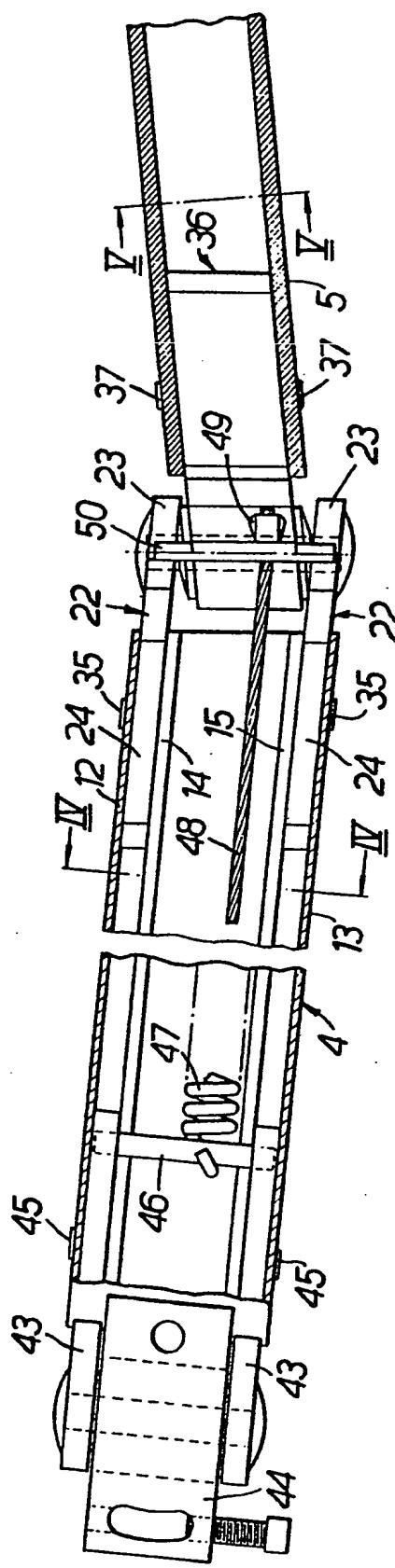


FIG. 2.

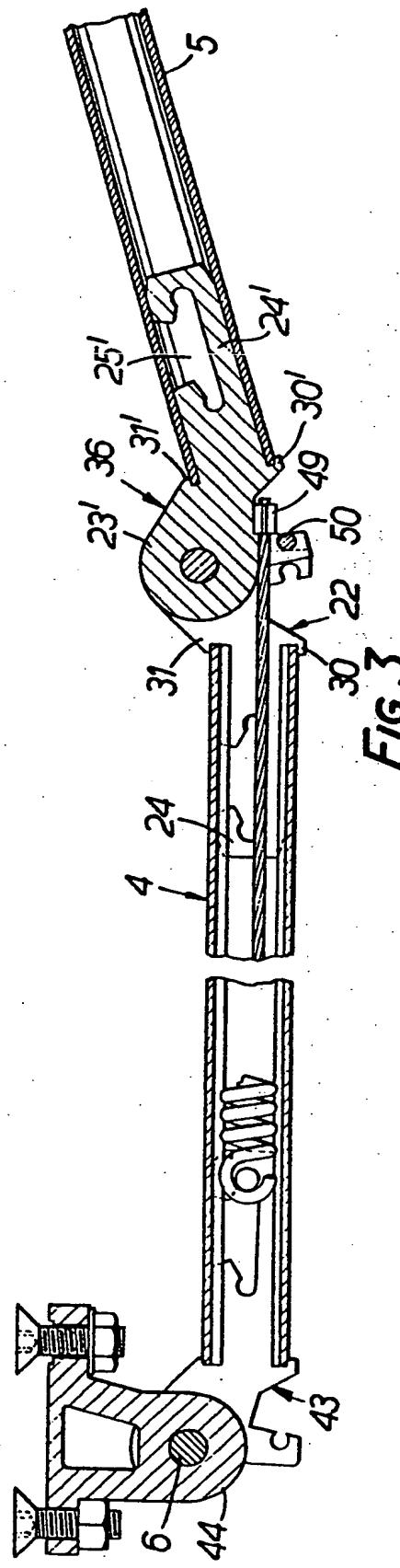
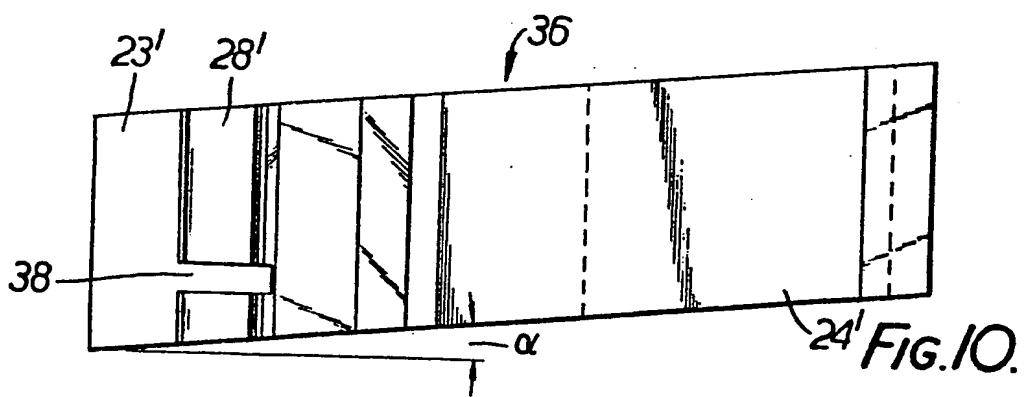
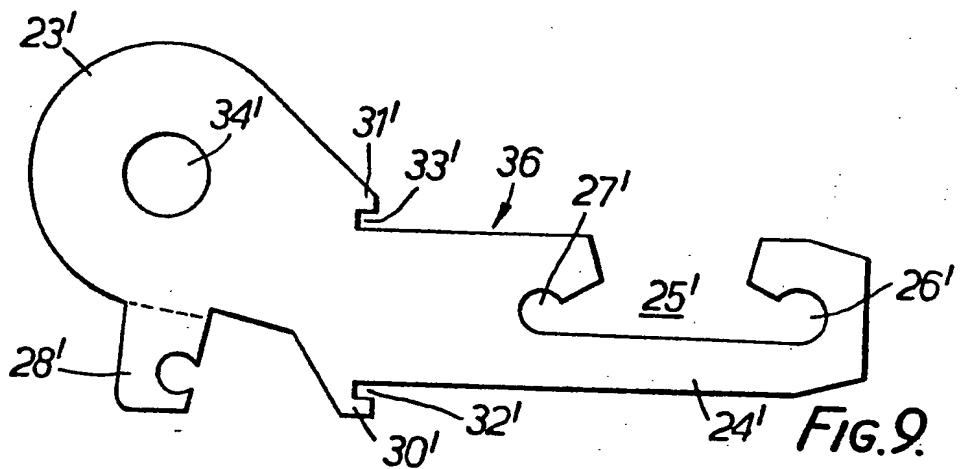
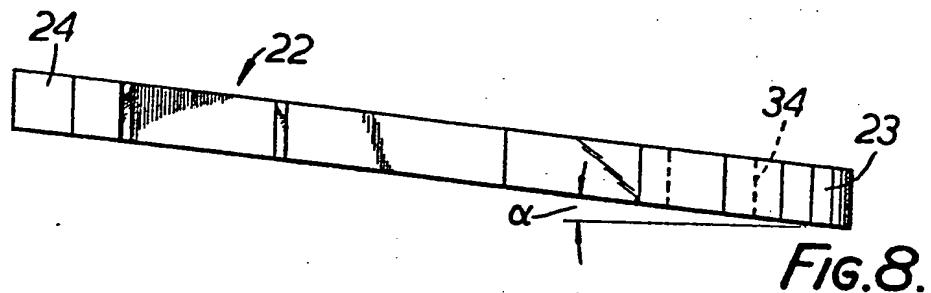
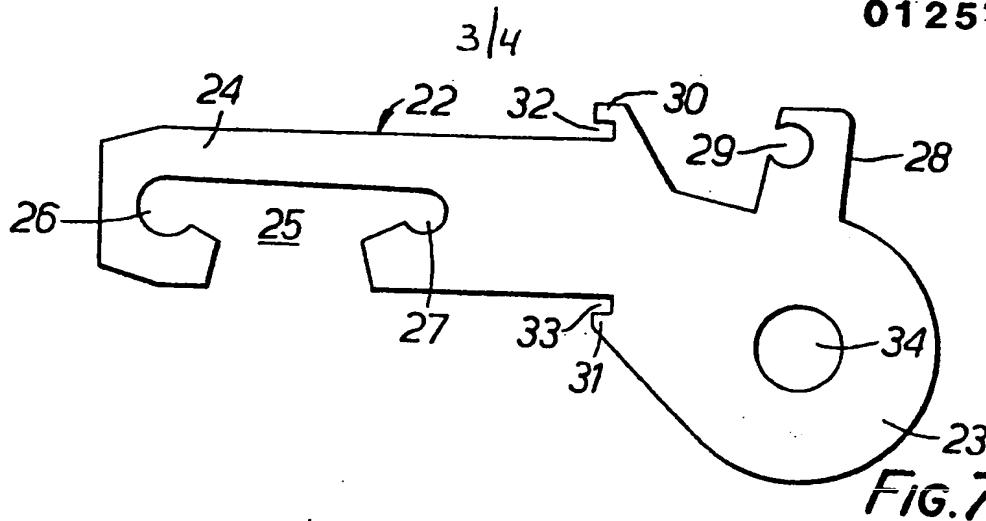


FIG. 3.

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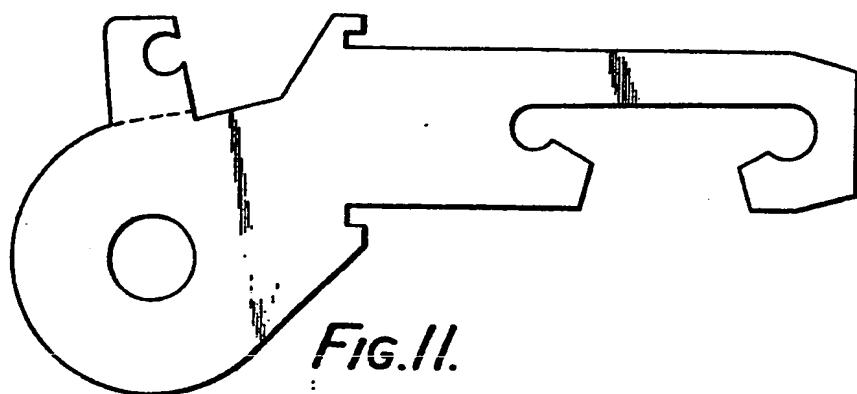


FIG.11.

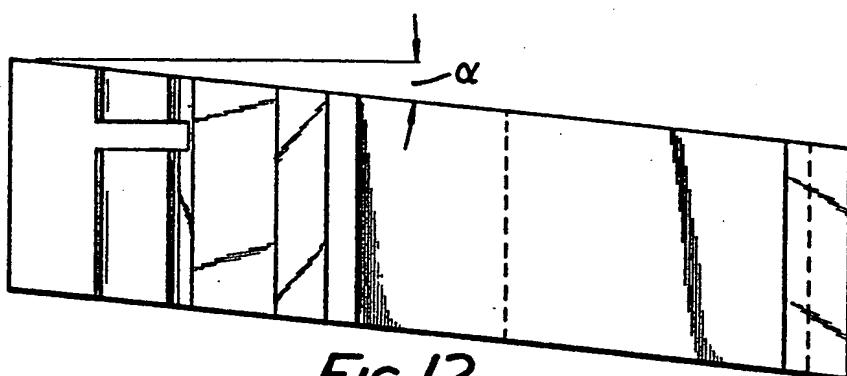


FIG.12.



FIG.13.

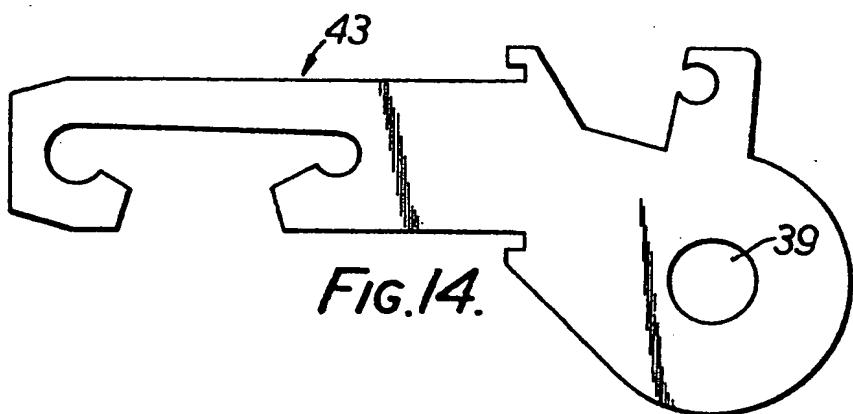


FIG.14.



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## EUROPEAN SEARCH REPORT

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Application number

EP 84 20 0663

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ?)
A	FR-A-2 381 879 (VOSS) ---		E 04 F 10/06
A	DE-A-2 817 759 (RIRI ITALIA) ---		
A	CH-A- 603 935 (MERKEL) -----		
The present search report has been drawn up for all claims			
Place of search THE HAGUE	Date of completion of the search 01-08-1984	Examiner PERROTTA A.	
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